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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/605,708	GONG ET AL.	
	Examiner	Art Unit	
	ANOOP SINGH	1632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 May 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,9-15,20,21,24,30-32 and 35-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 9-15, 20-21, 24, 30-32, 35-44 and 45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09913898.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 9/17/09.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

In view of the appeal brief filed on May 26, 2009, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Peter Paras, Jr./
Supervisory Patent Examiner, Art Unit 1632

Applicant's submission of an information disclosure statement filed 9/17/2009 after submission of an appeal brief prompted the new grounds of rejection presented in this Office action. Applicant's arguments filed on May 26, 2009, has been received and entered. Claims 1-3, 9-15, 20-21, 24, 30-32, 35-44 and 45 are pending in this application.

Election/Restrictions

Applicant's election of claims 1-16, 20-21, 29-32 and 35-41 in the reply filed on January 19, 2006 was acknowledged. The applicants elected muscle specific promoter for examination. It is noted claim 19 is directed to muscle specific promoter and therefore claim 19 is rejoined with elected groups. It is noted that applicants have also amended previously withdrawn claim 24, which is also rejoined for the examination purposes to the extent it reads on elected invention.

Applicant timely traversed the restriction/election requirement in the reply filed on 1/19/2006.

Claims 1-3, 9-15, 20-21, 24, 30-32, 35-44 and 45 are currently under examination.

Information Disclosure Statement

The information disclosure statements (IDS) submitted on 09/17/2009 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements have been considered by the examiner.

Withdrawn-Claim Rejections-35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-3, 9-15, 20-21, 24, 30-32, 35-44 and 45 were rejected under 35 U.S.C. 112, first paragraph. Applicants' arguments filed on May 26, 2009 in conjunction with the declaration by Dr. Gong filed on October 7, 2008 stating that the virtually any muscle-specific promoter could be employed to produce fluorescent founder embryos and lines to obtain ornamental transgenic fish (see Gong's declaration dated 10/7/2008, page 3, and section 6). It is noted that instant rejection is withdrawn on the grounds that instant method to provide fluorescent transgenic fish could be practiced with any muscle-specific promoter by screening fluorescent founder embryos without undue experimentation. Therefore, rejection of claims 1-3, 9-15, 20-21, 24, 30-32, 35-44 and 45 is hereby withdrawn. Applicants' arguments with respect to the withdrawn rejections are thereby rendered moot.

Withdrawn-Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-3, 9-15, 20-21, 24, 30-32, 35-44 and 45 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Applicants' arguments that specification fully describes different type of promoters in the claimed method is persuasive, particularly since the Gong's declaration explicitly states "virtually any muscle-specific promoter can be employed to produce very highly fluorescent founder embryos and lines" (see Gong's declaration dated 10/7/2008, page 3, section 6). One of ordinary skill in the art could readily screen different type of muscle specific promoter for the desired fluorescent activity using the method known in the art. Therefore, rejection of claims 1-3, 9-15, 20-21, 24, 30-32, 35-44 and 45 is hereby withdrawn. Applicants' arguments with respect to the withdrawn rejections are thereby rendered moot.

New-Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 15, 20-21, 30, 32, 39, 42-44 and 45 are rejected under 35 U.S.C. 102(a) as being anticipated by Gong et al (Asia Pacific Bio Tech News, 1998, 2, 16, 280, IDS).

Instant rejection is applied to the breadth of the claim encompassing a method of providing transgenic fish to ornamental fish market by screening the transgenic embryo that shows fluorescence under any light using a muscle specific.

With respect to claims 42-45, Gong et al teach a method of providing transgenic fish to ornamental fish market by obtaining transgenic fish line showing green fluorescence and then selecting or? fish that is suitable for distribution to ornamental fish market. Gong et al teach generating transgenic fry by injecting separately hybrid DNA construct pCK-EGFP, pMCK-EGFP and pARP-EGP into zebrafish embryo to generate transgenic fish that showed fluorescence on muscle and multiple tissue respectively (see page 16, col. 3. para. 1). Gong et al teach distributing said zebra fish to ornamental fish market, meeting the limitation of the claims 43-45. It is also disclosed that transgenic zebrafish expresses an EGFP (limitation of claims 39,

42, 44-45) and wherein the expression is driven by zebrafish muscle specific promoters MCL and MCK, meeting the limitation of claims 20-21. Regarding claims 15, 30, 32, Gong et al also disclose the method may include one or more fluorescence protein that are expressed from more than one chimeric construct in the fish or fish expresses more than one florescent protein (see page 16, col. 3, para. 2). Accordingly, Gong et al anticipate claims 15, 20-21, 30, 32, 39, 42-44 and 45.

New-Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Applicant's submission of a reference that was not previously available after submission of an appeal brief necessitated the new grounds of rejection that are presented as follows:

Claims 1, 36-37, 39-40, 42-45, are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashijima et al (Dev Biol. 1997; 192(2): 289-99, IDS), Hua et at (thesis submitted to Departments of Botany & Zoology, National University of Singapore, 1995/96, IDS, filed 9/17/09) and Yanong et al (Seminars in Avian and Exotic Pet Medicine, October, Vol 5, No 4, 1996: 22-235) or Mulertt Hugo (The Goldfish and its systematic culture with a view of profit, 1883).

With respect to claims 43-45, Higashijima et al teach a method comprising obtaining transgenic fish by screening one or more transgenic zebrafish embryos comprising fluorescent gene under the control of a muscle specific promoter by exposing to a light source and selecting embryo showing stable fluorescence to produce transgenic line that shows EGFP throughout the body of one line whereas other two transgenic lines showed identical spatial expression of GFP in muscle cells (pp 295, col. 1, para 2, Fig 2, 4 and table 1, page 290, col. 2, last para.), demonstrating consistent expression of green fluorescence meeting the limitation of the claims. With respect to claim 36-37, 39-40, Higashijima et al teach that the fluorescent progeny (F1) of

each founder were raised to sexual maturity and mated with wild-type fish. All the lines tested produced fluorescent embryos and level of expression was also completely inherited. Additionally, Higashijima et al show stable transmission of GFP expression in three lines of F3 generation suggesting that transgene is stably integrated into the genome of each zebra fish line (pp 297, col. 1, para. 1). It is also disclosed that fluorescence expression could be seen with FITC filter suggesting that fluorescent expression on fish could be best viewed at excitation wavelength of blue light (360-420 nm) (pp 292, col.2, para 2) . Higashijima et al do not teach distributing fish displaying green color to the ornamental fish market.

However, such was suggested by Hua who reported long term economic value of creating transgenic ornamental fish that express the green fluorescent protein in its muscle. It is noted that Hua et al also characterize the MLC 2 promoter, a fusion gene of the MLC promoter and contemplate driving the GFP expression in a fish. Additionally, Hua et al teach that GFP will be expressed only in the fast skeletal muscle. Hua et al further contemplate using the same gene construct to create other transgenic ornamental fishes (see page 81, last para. and page 82, para. 1). While Hua et al provide explicit motivation to crate a transgenic ornamental fish showing fluorescence that has a great economic value, but did not teach distributing ornamental fish to market.

However, distribution of ornamental fish to market was well known to one of ordinary skill in the art. For instance, Yanong disclosed that different variety of ornamental fish are sold at pet store or through mail order catalogue (see page 223, col. 1, para. 2). Mulertt Hugo also discloses ornamental fish such as gold fish are distributed in market and offered for sale in China (see page 6).

It would have been obvious for one of ordinary skill in the art at the time of invention to modify the method of Higashijima by providing fluorescent transgenic fish to ornamental fish market as described by Hua and Yanong/ Hugo. Higashijima et al had already disclosed a method for obtaining fluorescence transgenic fish displaying fluorescence in the muscle of the fish. In addition, Hua provided motivation by reporting long term economic value of creating transgenic ornamental fishes that express the green fluorescent protein gene in its muscle. Other limitations of claim 1, wherein fish displays color in sunlight would have been routine optimization of screening and selecting stable transgenic embryo using the method of

Higashijima et al to select an embryo showing fluorescence in different light including sun light to generate stable transgenic line suitable. One who would have practiced the invention would have had reasonable expectation of successfully obtaining a transgenic fish comprising fluorescent gene and distributing in the market because Higashijima already taught a method for obtaining transgenic fish line that exhibits fluorescence on the muscle cells, while Hua taught long term economic value of creating transgenic ornamental fishes that express the green fluorescent protein gene in its muscle and also embraced the potential of using muscle specific MLC 2 promoter for driving the GFP expression in the fish that glows in the dark. One of ordinary skill in art would have been motivated to combine the teaching Higashijima, Hua and Yanong/ Hugo because a fluorescent transgenic fish comprising a fluorescent gene operably linked to a promoter would have allowed the artisan to distribute fluorescent fish displaying color at a place of normal or ordinary uses of such an item (pet store or ornamental fish market) for marketing the transgenic fish as per teaching of Yanong/ Hugo.

Therefore, the claimed invention would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention.

Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashijima et al (Dev Biol. 1997; 192(2): 289-99, IDS), Hua et at (thesis submitted to Departments of Botany & Zoology, National University of Singapore, 1995/96, IDS), Yanong et al (Seminars in Avian and Exotic Pet Medicine, October, Vol 5, No 4, 1996: 22-235) or Mulertt Hugo (The Goldfish and its systematic culture with a view of profit, 1883) as applied to claims 1, 36-37, 39-40, 42-45 above, and further in view of Abeywickrama et al (US Patent no: 5028839, dated 7/2/1991).

The combined teachings of Higashijima et al, Hua et al and Yanong/ Hugo have been discussed above and relied in same manner here. While combination of reference teach viewing the transgenic fish under the blue light, but differ from claimed invention by not explicitly teaching displaying any fish under any other light source.

Prior to instant invention, use of fluorescent lamp in aquaria was well known to person of ordinary skill. Specifically, Abeywickrama et al teach fluorescent lamp including a luminescent layer comprising a mixture of red, green and blue phosphors, each phosphor when the lamp is in use emitting light in a respective spectral region, the red phosphor emitting predominantly in the

spectral region of from 610 nm to 620 nm, the green phosphor emitting predominantly in the spectral region of from 540 nm to 545 nm and the blue phosphor having a peak emission wavelength in the spectral region from 430 nm to 480 nm (see abstract and claim 3).

It would have been obvious for one of ordinary skill in the art at the time of invention to modify the method of Higashijima, Hua and Yanong/ Hugo et al by displaying the transgenic fluorescent fish under lamp emitting light in different spectra region in order to better visualize the fluorescence emitting fish. Higashijima provided motivation by indicating that different fluorescence gene have different emission spectra. It is noted that Higashijima, specifically viewed transgenic fish expressing GFP under fluorescent lamp (420-488nm). One who would have practiced the invention would have had reasonable expectation of successfully displaying the transgenic fish comprising fluorescent gene under light emitting different wavelength as disclosed by Abeywickrama for displaying fluorescent transgenic fish for ornamental purposes. One of ordinary skill in art would have been motivated to combine the teaching Higashijima, Hua, Yanong/ Hugo and Abeywickrama because a fluorescent transgenic fish comprising one or more fluorescent gene operably linked to a promoter displayed under lamp emitting light of different emission spectra would have provided fluorescent fish that would have attracted attention upon distribution of fluorescent transgenic fish as in a pet store or ornamental fish market for commercial sale as taught by Hua and Yanong/ Hugo.

Therefore, the claimed invention would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higashijima et al (Dev Biol. 1997; 192(2): 289-99, IDS), Hua et at (thesis submitted to Departments of Botany & Zoology, National University of Singapore, 1995/96, IDS), Yanong et al (Seminars in Avian and Exotic Pet Medicine, October, Vol 5, No 4, 1996: 22-235) or Mulertt Hugo (The Goldfish and its systematic culture with a view of profit, 1883) as applied to claims 1, 36-37, 39-40, 42-45 above, and further in view of Moss et al (Gene. 1996; 173: 89-98, IDS).

The combined teachings of Higashijima et al, Hua, Yanong/ Hugo et al have been discussed above and relied in same manner here. Although, Higashijima taught a transgenic fish

comprising fluorescent gene under control of muscle specific promoter and Hua embraced the potential of ML2 promoter to produce transgenic ornamental fish but combination of references differ from claimed invention by not expressing GFP under the control of MLC2 gene promoter.

Prior to instant invention, Moss et al. teach a zebrafish that comprises a myosin light chain enhancer operatively linked to a sequence encoding GFP for the muscle specific expression. Characterization of the resulting fish indicated fluorescence from expression of the transgene was seen uniquely in the muscle and not other non-muscle cells in the fish.

It would have been obvious for one of ordinary skill in the art at the time of invention to modify the method of Higashijima to replace beta-actin promoter with functionally equivalent other muscle specific promoter such as MLC promoter that showed the specificity of expression in muscles of Zebrafish as per the teaching of Hua and Moss. One who would have practiced the invention would have had reasonable expectation of successfully modifying the construct disclosed by Higashijima to replace beta actin promoter with MLC2 promoter as Hua and Moss both taught that MLC promoter work well in zebrafish with specific expression in muscle cells of the fish. One of ordinary skill in art would have been motivated to combine the teaching Higashijima, Chan, Hua, Yanong/ Hugo because a fluorescent transgenic fish comprising one or more fluorescent gene operably linked to a muscle specific promoter such as MLC2 would have provided strong muscles specific fluorescence suitable for distribution of fluorescent transgenic fish to the pet store or ornamental fish market.)

Therefore, the claimed invention would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higashijima et al (Dev Biol. 1997; 192(2): 289-99, IDS), Hua et at (thesis submitted to Departments of Botany & Zoology, National University of Singapore, 1995/96, IDS), Yanong et al (Seminars in Avian and Exotic Pet Medicine, October, Vol 5, No 4, 1996: 22-235) or Mulertt Hugo (The Goldfish and its systematic culture with a view of profit, 1883) as applied to claims 1, 36-37, 39-40, 42-45 above, and further in view of Liao et al (Analytical Biochemistry, 253, 1997, 137-139, IDS).

The combined teachings of Higashijima et al, Hua, Yanong/ Hugo et al have been discussed above and relied in same manner here. Although, Higashijima taught a transgenic fish

comprising fluorescent gene under control of muscle specific promoter and Hua embraced the potential of ML2 promoter to produce transgenic ornamental fish but combination of references differ from claimed invention by not expressing GFP under the control of MCK promoter.

Prior to instant invention, Liao teaches successful isolation of a 4.3 kb promoter region from a zebrafish cytokeratin gene.

It would have been obvious for one of ordinary skill in the art at the time of invention to modify the method of Higashijima to substitute beta-actin promoter with other muscle specific promoter such as MCK as disclosed by Liao, as a matter of design choice, said design choice amounting to combining prior art elements according to known methods to yield predictable results. One who would have practiced the invention would have had reasonable expectation of successfully modifying the construct disclosed by Higashijima to replace beta actin promoter with MCK promoter since Higashijima had already indicated that tissue specific promoter/enhancer from zebrafish origin work well in zebrafish (see page 290, col. 1, last para. bridging to col. 2, page 298, col. 2, para. 1). One of ordinary skill in art would have been motivated to combine the teaching Higashijima with Liao because a fluorescent transgenic fish comprising one or more fluorescent gene operably linked to a muscle specific promoter such as MCK would have provided strong muscles specific fluorescence for distribution of fluorescent ornamental transgenic fish to pet store or ornamental fish market.

Therefore, the claimed invention would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention.

Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higashijima et al (Dev Biol. 1997; 192(2): 289-99, IDS), Hua et at (thesis submitted to Departments of Botany & Zoology, National University of Singapore, 1995/96, IDS), Yanong et al (Seminars in Avian and Exotic Pet Medicine, October, Vol 5, No 4, 1996: 22-235) or Mulertt Hugo (The Goldfish and its systematic culture with a view of profit, 1883) as applied to claims 1, 36-37, 39-40, 42-45 above, and further in view of Culp et al (PNAS, 1991, 88, 7953-7957) .

The combined teachings of Higashijima et al, Hua, Yanong/ Hugo et al have been discussed above and relied in same manner here. Although, Higashijima taught a transgenic fish

comprising fluorescent gene under control of muscle specific promoter and Hua embraced the potential of ML2 promoter to produce transgenic ornamental fish but combination of references differ from claimed invention by not disclosing breeding the first transgenic fish with a second transgenic fish of same specie.

However, prior to instant invention, it was routine to cross transgenic founder sibling or to a non transgenic wild type fish to generate stable transgenic fish. For instance Culp et al teach raising transgenic embryo to sexual maturity and then pair-mated to each other or to uninjected fish to generate stable transgenic zebra fish (see table 1 and page 7954, col. 2, para. 2).

Therefore, it would have been *prima facie* obvious for a person of ordinary skill in the art seeking to distribute ornamental fish displaying color to ornamental fish market by combining the respective teachings of Higashijima , Hua, Yanong/ Hugo and Culp to generate stable transgenic zebra fish line using the method disclosed by Culp, with a reasonable expectation of success. A person of skill in the art would have been motivated to cross the transgenic fish (F1) with a second fish that is either a wild type or a transgenic fish as disclosed by Culp et al, as a matter of design choice, said design choice amounting to combining prior art elements according to known methods to yield predictable results. One who would have practiced the invention would have had reasonable expectation of successfully obtaining a stable transgenic fish line comprising fluorescent gene and distributing in the market because Higashijima et al had already disclosed a method for obtaining stable fluorescence transgenic fish line displaying fluorescence, while Hua, Yanong/ Hugo had described that distribution of ornamental fish for sale in fish in ornamental fish market. Given that prior art teaches that pair-mating of transgenic fish (F1) to each other or to wild type to generate stable transgenic line, it would have only required routine experimentation to combine the teaching of Higashijima , Hua, Yanong/ Hugo to generate stable transgenic line that expresses fluorescence on the surface of the fish up on exposure to a light. This would have allowed the artisan to distribute fluorescent fish displaying color to pet store or ornamental fish market.

Thus, the claimed invention, as a whole, is clearly *prima facie* obvious in the absence of evidence to the contrary.

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higashijima et al (Dev Biol. 1997; 192(2): 289-99, IDS), Hua et at (thesis submitted to Departments of Botany & Zoology, National University of Singapore, 1995/96, IDS), Yanong et al (Seminars in Avian and Exotic Pet Medicine, October, Vol 5, No 4, 1996: 22-235) or Mulertt Hugo (The Goldfish and its systematic culture with a view of profit, 1883) as applied to claims 1, 36, 43 above, and further in view of Lin et al (US patent application no 20020178461, dated 4/30/2002 effective filing date 6/9/1997) or Hernández et al (Mol Mar Biol Biotechnol. 1997 Dec;6(4):364-75).

The combined teachings of Higashijima et al, Hua et al and Yanong/ Hugo have been discussed above and relied in same manner here. Higashijima taught a transgenic fish comprising fluorescent gene under control of muscle specific promoter, while Hua embraced the potential of ML2 promoter to produce transgenic ornamental fish of other species particularly the ornamental fish species by using the same gene construct to create other transgenic ornamental fishes (see page 82, para. 1 in Hua). However, combination of reference does teach making transgenic fish of other species.

However, such was known in prior art. For instance, Lin et al teaches that it was routine in art to make transgenic fish comprising an exogenous construct, wherein the construct comprises homologous expression sequences operably linked to a sequence encoding an expression product, wherein the expression product is expressed only in specific cell lineages, wherein the expression product is a GFP and wherein the fish is s selected from the group consisting of zebrafish, medaka, trout, salmon, carp, tilapia, goldfish, loach, and catfish (see claim 1, 4-5 and 7 and 26 and 28 of '461). Likewise, Hernández et al teach making stable transgenic tilapia line was routine in art (see abstract).

It would have been obvious for one of ordinary skill in the art at the time of invention to modify the method of Higashijima by substituting the embryo from zebrafish with functionally equivalent embryo from another specie of fish such as tilapia to generate stable transgenic tiapia fish line using the method known in prior art, with a reasonable expectation of success. A person of skill in the art would have been motivated to do so in order to generate other species of ornamental fish as per the teaching of Hua for distribution to ornamental fish market, as a matter of design choice, said design choice amounting to combining prior art elements according to known methods to yield predictable results. One who would have practiced the invention would

have had reasonable expectation of successfully obtaining a stable transgenic fish line of other species of fish comprising fluorescent gene and distributing said fish in the market because Higashijima et al, Lin/ Hernández et al and had already disclosed a method for obtaining stable transgenic fish of other species, while Hua, Yanong/ Hugo had described that distribution of ornamental fish for sale in fish in ornamental fish market. Given that prior art teaches that stable transgenic line of other species could be made, it would have only required routine experimentation to combine the respective teaching to generate stable transgenic line from different species. This would have allowed the artisan to distribute fluorescent fish displaying color to pet store or ornamental fish market.

Therefore, the claimed invention would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention.

Claims 9-11, 15, 24, 30-32, 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashijima et al (Dev Biol. 1997; 192(2): 289-99, IDS), Hua et at (thesis submitted to Departments of Botany & Zoology, National University of Singapore, 1995/96, IDS), Yanong et al (Seminars in Avian and Exotic Pet Medicine, October, Vol 5, No 4, 1996: 22-235) as applied to claims 1, 36-37, 39-40, 42-45 above, and further in view of Flanagan (Virus Genes, 1987, 1:61-71) and Chalfie, et al Green fluorescent protein: properties, applications, and protocols, Wiley-Liss, New York, 1998, art of record).

The combined teachings of Higashijima et al, Hua and Yanong have been discussed above and relied in same manner here. Higashijima et al teach a method comprising obtaining transgenic fish by screening one or more transgenic zebrafish embryo comprising fluorescent gene under the control of a muscle specific promoter by exposing to a light source and selecting embryo showing stable fluorescence to produce transgenic line that shows EGFP throughout the body of one line whereas other two transgenic lines showed identical spatial expression of GFP in muscle cells (pp 295, col. 1, para 2, Fig 2, 4 and table 1, page 290, col. 2, last para.). Higashijima et al report use of ubiquitous promoter to drive expression of reporter gene in transgenic fish (see page 290, col. 1, para. 1, see Lin and page 291, col. 2, last para., Amsterdam et), but differ wherein one or more gene is under the control of different promoters.

Such is disclosed by Flanagan who taught a recombinant plasmid comprising two different reporter genes in opposing direction, driven by two different promoters (see Figure 1). Flanagan taught use of various promoters as the plasmid was used for the purpose of comparing the activity of different promoters by comparing the resulting reporter gene expression. Flanagan taught that divergent orientation of the promoters minimized any interference between the promoters (pages 67-70). Flanagan differs from claimed invention by not disclosing use of different fluorescent protein as reporter gene.

However, at the time the claimed invention was made, use of different fluorescent genes as reporter gene were available in prior art. Chalfie disclosed cloning of cDNA for green fluorescent protein (GFP) originally isolated from the jellyfish that is modified by site-directed mutagenesis for different emission spectra and thus several artificial fluorescent color proteins including yellow fluorescent protein (YFP), blue fluorescent protein (BFP), and cyan fluorescent protein (CFP) were available prior to instant invention (see pages 29-30, 244-246, especially pages 30 and 245, para 1 and 2). Chalfie differed from the claimed invention by not teaching expressing fluorescent gene in transgenic fish.

It would have been obvious for one of ordinary skill in the art at the time of invention to modify the method of Higashijima by providing fluorescent transgenic fish to ornamental fish market by substituting one fluorescent gene such as GFP with functionally equivalent other fluorescent gene such as BFP, YFP, as disclosed by Chalife. This would have allowed person of ordinary skill to express different fluorescent color for distribution of transgenic fish displaying different color for distribution. The limitation of claim 15, 24 32-33 directed to fish expressing one or more color because of different fluorescent protein under the control of distinct MLC2, alpha, beta-actin promoter and/or ubiquitous promoter thereby expressing fluorescence in different tissue would have been an obvious modification to one or ordinary skill in the art. It is relevant to point that Higashijima et al specifically taught a transgenic fish line comprising nucleic acid encoding fluorescence protein operably linked to alpha, beta-actin promoter and also reported use of *Xenopus* elongation factor 1alpha enhancer/promoter (see page 290, col. 1, para. 1), while Flanagan provided guidance with respect to use of plasmid comprising two different reporter genes in opposing direction, driven by two different promoters. One who would have practiced the invention would have had reasonable expectation of successfully obtaining a

transgenic fish comprising one or more fluorescent gene under the control of muscle specific promoter and/or ubiquitous promoter because Higashijima already taught a method for making fluorescent transgenic fish. One of skill in the art would have a reasonable expectation of success in combining the above teachings as the molecular tool and technology was well known, routine and available at the time of filing that would have provided fluorescent fish that would have attracted attention upon distribution of color displaying transgenic fish in pet store or ornamental fish market.

Therefore, the claimed invention would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention.

Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashijima et al (Dev Biol. 1997; 192(2): 289-99, IDS), Hua et at (thesis submitted to Departments of Botany & Zoology, National University of Singapore, 1995/96, IDS), Yanong et al (Seminars in Avian and Exotic Pet Medicine, October, Vol 5, No 4, 1996: 22-235) or Mulertt Hugo (The Goldfish and its systematic culture with a view of profit, 1883) as applied to claims 1, 36-37, 39-40, 42-45 above, and further in view of Yang et al (1998; 273(14):8212-6, IDS) and Living Colors Subcellular Localization Vectors (October 1998) CLONTECHniques XIII (4):8-9, art of record).

The combined teachings of Higashijima et al, Hua, Yanong/ Hugo have been discussed above and relied in same manner here. Although, combination of reference teaches obtaining a transgenic fish expressing GFP/EGFP, but differ from claimed invention by not disclosing expressing other fluorescent protein.

At the time the claimed invention was made, GFP and other variants of GFP were available in prior art. CLONTECHniques disclosed availability of enhanced cyan fluorescent protein (ECFP), an alternative to enhanced blue fluorescent protein and enhanced yellow fluorescent protein (EYFP) color variants (see page 8 and 9), while Yang et al taught to combine a blue emission mutant of GFP containing four point mutations (Phe-64 to Leu, Ser-65 to Thr, Tyr-66 to His, and Tyr-145 to Phe) with a synthetic gene sequence containing codons preferentially found in highly expressed human proteins to overcome the dim fluorescence and low expression levels attained in higher eukaryotes with such variants (see abstract).

It would have been obvious for one of ordinary skill in the art at the time of invention to modify the method of Higashijima by providing fluorescent transgenic fish to ornamental fish market by substituting one fluorescent gene such as GFP with functionally equivalent other fluorescent gene such as EYFP, ECFP as disclosed by Yang and CLONTECHniques as a matter of design choice, said design choice amounting to combining prior art elements according to known methods to yield predictable results. One who would have practiced the invention would have had reasonable expectation of successfully obtaining a stable transgenic fish line comprising fluorescent gene and distributing in the market because Higashijima et al had already disclosed a method for obtaining stable fluorescence transgenic fish line displaying fluorescence, while Hua, Yanong/ Hugo had described that distribution of ornamental fish for sale in fish in ornamental fish market. Hence it would have been prima facie obvious to combine the teaching Higashijima, Yang et al/ CLONTECHniques because a fluorescent ornamental transgenic fish comprising one or more fluorescent gene operably linked to a promoter would have provided fluorescent fish showing multiple colors and thereby suitable for distribution to pet store or ornamental fish market.

Therefore, the claimed invention would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention.

Claims 1, 36-37, 39-40, 42-44 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashijima et al (Dev Biol. 1997; 192(2): 289-99, IDS) and Yanong et al (Seminars in Avian and Exotic Pet Medicine, October, Vol 5, No 4, 1996: 22-235).

Claims 1, 36-37, 39-40, 42-45, are again included in the rejection to the extent base claim is interpreted broadly reading on obtaining a transgenic zebra fish line expressing GFP and distributing said fish to ornamental fish market. For the purpose of instant rejection, the term ornamental is interpreted broadly in view of applicant's disclosure that does not appear to be limited to ornamental species of fish per se and embrace a general list of different kind of fish. While there are some species listed may be considered ornamental, some are clearly not ornamental. Moreover, it is noted that the listing includes the recitation of "etc." (see para. 96, page 47 of the specification). Therefore, without any clear indication of the specificity of the

listing any fish displaying color is considered ornamental fish suitable for sale in ornamental fish market.

The teaching of Higashijima et al has been discussed above and relied in same manner here. Higashijima et al teach a method comprising obtaining transgenic fish by screening one or more transgenic zebrafish embryo comprising fluorescent gene under the control of a muscle specific promoter by exposing to a light source and selecting embryo showing stable fluorescence to produce transgenic line that shows EGFP throughout the body of one line whereas other two transgenic lines showed identical spatial expression of GFP in muscle cells (pp 295, col. 1, para 2, Fig 2, 4 and table 1, page 290, col. 2, last para.), demonstrating consistent expression of green fluorescence meeting the limitation of the claims. With respect to claim 36-37, 39-40, Higashijima et al teach that the fluorescent progeny (F1) of each founder were raised to sexual maturity and mated with wild-type fish. All the lines tested produced fluorescent embryos and level of expression was also completely inherited. Additionally, Higashijima et al show stable transmission of GFP expression in three lines of F3 generation suggesting that transgene is stably integrated into the genome of each zebra fish line (pp 297, col. 1, para. 1). It is also disclosed that fluorescence expression could be seen with FITC filter suggesting that fluorescent expression on fish could be best viewed at excitation wavelength of blue light (360-420 nm) (pp 292, col.2, para 2) . Higashijima et al differ from claimed invention by not explicitly teaching distribution of ornamental fish displaying color to ornamental fish market.

However, distribution of ornamental fish to market was well known to one of ordinary skill in the art. For instance, Yanong teaches that different varieties of ornamental fish are sold at pet store or through mail order catalogue (see page 223, col. 1, para. 2).

It would have been obvious for one of ordinary skill in the art at the time of invention to combine the respective teaching by providing fluorescent transgenic fish of Higashijima to ornamental fish market to sell the transgenic ornamental fish as disclosed by Yanong. A person of skill in the art would have been motivated to do so because Yanong taught that coloration of fish is an important trait of ornamental fish. Given that Higashijima et al had already disclosed a method for providing transgenic fish displaying fluorescence in the muscle of the fish. It would have been prima facie obvious for one of ordinary skill in the art to distribute the ornamental fish of Higashijima et al. Other limitations of claim 1, wherein fish displays color in sunlight would

have been routine optimization of screening and selecting stable transgenic embryo using the method of Higashijima et al to select an embryo showing fluorescence in different light including sun light to generate stable transgenic line suitable for ornamental fish market. One who would have practiced the invention would have had reasonable expectation of successfully obtaining a transgenic fish comprising fluorescent gene and distributing in the market because Higashijima already taught a method for obtaining transgenic fish line, while Yanong had taught fish displaying is important trait of ornamental fish that could be sold in ornamental fish market. One of ordinary skill in art would have been motivated to combine the teaching Higashijima and Yanong because a fluorescent transgenic fish comprising a fluorescent gene operably linked to a promoter would have allowed the artisan to distribute fluorescent fish displaying color at a place of normal or ordinary uses of such an item such as pet store or ornamental fish market as per teaching of Yanong.

Therefore, the claimed invention would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention.

New-Double Patenting-Necessitated by amendments

It is noted that claims directed to use of muscle specific promoter to generate transgenic ornamental fish have been rejoined with the elected species of promoter in US patent application #10/749,032. Therefore, following obviousness type double patenting rejection is made in view of amendments to claim in '032.

Claims 1-3, 9-15, 20-21, 24, 30-32, 35-44 and 45 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 42-46, 53-55, 58-60, 63-65, 68-81 of copending Application No. 10/749032.

Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are directed to a method of providing transgenic fish to ornamental fish market. For instance, instant claims 43-45 , 1-3, 9-15 are directed to a method of providing transgenic fish to the ornamental fish market comprising the step of (a) obtaining a transgenic ornamental fish comprising a chimeric gene comprising a promoter that drives the expression of a fluorescent protein selected from a group consisting of BFP, YFP and CFP

predominantly in muscles of said fish, said promoter being a muscle specific promoter, such that said transgenic fish expresses fluorescent protein encoded by fluorescent gene in skeletal muscle at a level sufficient such that said transgenic fish fluoresces upon exposure to one or more light and (b) distributing said fish to the ornamental fish market. Subsequent claims limit the promoter to include MCK (claim 20) and MLC (claim 21). Claims also limit the method of claims to further comprises displaying fish under blue or UV light and wherein fish expresses BFP (claim 9), EBFP (claim 10), YFP or other fluorescent gene set forth in claims 12-14. Claims are also directed to a method wherein the transgenic fish is stable transgenic fish line by breeding the transgenic fish with a second fish to obtain offspring, subsequently limiting the second fish to be selected form a list consisting of different species of fish (claim 36-42). In contrast, claims 42-46, 53-55, 58-60, 63-65, 68-81 of '032 are directed to a method of providing transgenic fish to the ornamental fish market comprising the steps of, obtaining transgenic fish embryos or fry comprising one or more fluorescence genes, wherein the transgenic fish embryos or fry express a fluorescent proteins encoded by the one or more fluorescence genes; (b) selecting one or more of from-said transgenic fish embryos or fry by exposing the embryos or fry to a light source one, (c) producing one or more transgenic lines of fish from said one or more selected embryos or fry; and (d) distributing transgenic fish produced from one or more of said selected lines to the ornamental fish market (claim 42). Subsequent claims limit the method, wherein said fish is displayed under blue or UV light (claim 43-44, 79 and 80), and expresses a GFP (claim 45). Claims 53-55, 58 limits the method of claim 42, wherein the promoter is zebrafish muscle specific promoter, further limiting to MLC promoter (claim 60). Claims 68-70, limit the method, wherein one or more fluorescent protein is expressed. Claims 71-80 limit the method of claim 42, wherein transgenic fish line is a stable transgenic line. Thus, the claims of instant application encompass the method specifically claimed in application '032.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined

application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Double Patenting

Claims 1-3, 9-16, 19-21, 24, 30-32, 35-42 are rejected and newly added claims 43-45 are also rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7 of U. S. Patent No. 7,135,613 in view of Higashijima et al (Dev Biol. 1997; 192(2): 289-99, IDS) and Yanong et al (Seminars in Avian and Exotic Pet Medicine, October, Vol 5, No 4, 1996: 22-235).

Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: In the instant case, even though the conflicting claims are not the same, they are not patentably distinct from each other because both sets of claims encompass a transgenic fish comprising a chimeric gene comprising a muscle specific promoter that drives the expression of a structural gene in said fish, wherein the transgenic fish contains said promoter in germ cells and/or in somatic cells and which is capable of breeding with either a said transgenic fish or a non-transgenic fish to produce viable and fertile transgenic progeny. It is noted that structural gene is specifically exemplified as different fluorescent gene in US patent 7,135,613. Additionally, the only asserted use of the claimed composition in '613 is distribution of the

transgenic ornamental fish to ornamental fish market and prior art recognized distribution of ornamental fish to ornamental market as per the teaching of Yanong /Hugo.

In the instant case, even though the conflicting claims are not the same, they are not patentably distinct from each other because both sets of claims encompass a transgenic fish comprising a chimeric gene comprising a promoter that drives the expression of a structural gene in said fish, wherein the transgenic fish contains said promoter in germ cells and/or in somatic cells and which is capable of breeding with either a said transgenic fish or a non-transgenic fish to produce viable and fertile transgenic progeny. For example instant claims 43-45 , 1-3, 9-15 are directed to a method of providing transgenic fish to the ornamental fish market comprising the step of (a) obtaining a transgenic ornamental fish comprising a chimeric gene comprising a promoter that drives the expression of a fluorescent protein selected from a group consisting of BFP, YFP and CFP predominantly in muscles of said fish, said promoter being a muscle specific promoter, such that said transgenic fish expresses fluorescent protein encoded by fluorescent gene in skeletal muscle at a level sufficient such that said transgenic fish fluoresces upon exposure to one or more light and (b) distributing said fish to the ornamental fish market. Subsequent claims limit the promoter to include MCK (claim 20) and MLC (claim 21). Claims also limit the method of claims to further comprises displaying fish under blue or UV light and wherein fish expresses BFP (claim 9), EBFP (claim 10), YFP or other fluorescent gene set forth in claims 12-14. Claims are also directed to a method wherein the transgenic fish is stable transgenic fish line by breeding the transgenic fish with a second fish to obtain offspring, subsequently limiting the second fish to be selected form a list consisting of different species of fish (claim 36-42). In contrast, claim 1-7of Patent '613 are directed to a transgenic fish comprising a chimeric gene comprising a promoter that drives the expression of a structural gene predominantly in muscles of said fish, said promoter being a fast skeletal muscle isoform of myosin light chain 2 gene promoter which includes the sequence of SEQ ID NO:22, wherein the transgenic fish contains said promoter in germ cells and/or in somatic cells and which is capable of breeding with either a said transgenic fish or a non-transgenic fish to produce viable and fertile transgenic progeny. Claim 2 is directed to a transgenic fish of claim 1, further comprising a fluorescent protein gene under control of said promoter. Claim 3 limits the transgenic fish of claim 2, wherein said fluorescent protein is expressed at a level sufficient that said fish fluoresces

upon exposure to sunlight. Claim 4 limits transgenic fish of claim 2, further defined as an ornamental fish for the ornamental fish market, which contains said promoter in germ cells and/or in somatic cells and which is capable of breeding with either a said transgenic fish or a non-transgenic fish to produce viable and fertile transgenic progeny. Claim 5 is directed to the transgenic fish of claim 2, wherein said fish and progeny of said fish emits green fluorescence when the whole fish is exposed to a blue or ultraviolet light. Claim 6 is directed to the transgenic fish of claim 2, wherein the fish comprises a zebrafish muscle creatine kinase gene promoter which is capable of directing a structural gene to be specifically expressed in muscles when it is inserted in front of the structural gene and introduced into fish embryos, which is a zebrafish.

It is noted that the limitation of a method of obtaining stable transgenic line for distribution in ornamental fish market was known to one of ordinary skill in the art as evident from the teaching of Higashijima et al. It is relevant to point that Higashijima et al teach a method of screening transgenic zebrafish showing fluorescence under a light said method comprising obtaining transgenic fish embryo comprising fluorescent gene under the control of a muscle specific promoter, selecting one or more transgenic fish embryo by exposing to a light source and producing transgenic line that shows EGFP throughout the body of one line whereas other two transgenic lines showed identical spatial expression of GFP in muscle cells (pp 295, col. 1, para 2, Fig 4). Therefore, it would have been obvious to one of skill in the art, at the time the invention was made, to use transgenic fish disclosed in '613 using the method of Higashijima et al for display and distribution of ornamental fish as disclosed by Yanong. Therefore, it would have been obvious to one of skill in the art, at the time the invention was made, to use transgenic fish disclosed in '613 for display and distribution of ornamental fish to ornamental fish market as per the teaching of Yanong.

Therefore, instant claims differ only with respect to a broader scope distributing transgenic fish which encompass those specifically claimed in patent 7,135,613.

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Response to the arguments

Applicants argue that during the prosecution of USSN 09/913,898, Applicants attempted to introduce claims consistent with the claims pending in the present application (amendment dated May 9, 2003). In response to this attempted amendment, the Examiner refused entry of the amendment, taking the position that such claims were found not to be drawn to the invention elected in that case, which later became the '613 patent.

In response, it is noted that Applicants attempts to introduce claims consistent with the claims pending in the present were refused by the examiner during the prosecution of USSN 09/913,898 because newly introduced claims were not directed to elected invention. It was indicated in the restriction requirement sent on 7/30/2003; 12/18/2003 that newly added business method claims are non responsive and not drawn to elected invention(MPEP 821.03). Applicants' arguments would be persuasive, if the application were a divisional. However, instant application is a continuation application. **Applicant is required to change the relationship from continuation to divisional** in order to overcome the rejection of record.

Conclusion

No claims allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANOOP SINGH whose telephone number is (571)272-3306. The examiner can normally be reached on 9:00AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Paras can be reached on (571) 272- 4517. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Anoop Singh/
Examiner, Art Unit 1632